REMARKS/ARGUMENTS

Prior to this Amendment, claims 1 and 3-36 were pending in the application.

Claim 1 is amended to stress that the storage nodes are selectable rather than preselected or fixed as shown by the cited references.

Independent claim 17 is amended to include the limitations of dependent claim 18, which is cancelled.

Claims 33-36 are cancelled.

After entry of the Amendment, claims 1, 3-17, and 19-32 remain for consideration by the Examiner.

Claim Rejections under 35 U.S.C. §102

In the Office Action, claims 1, 3, 4, 6-13, 17-25, and 28-36 were rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Pat. Publ. No. 2002/0035667 ("Bruning"). This rejection is traversed based on the following remarks.

Claim 1 calls for a set of storage nodes to be selected based on state information corresponding to the nodes. Bruning fails to teach such a data storage system. At least tow storage nodes collectively implement a unitary volume of network storage. Bruning also falls to show such collective action or cooperation. Hence, the system of claim 1 is not anticipated by Bruning.

More specifically, as shown in Figures 1A, 1B, and 2, Bruning teaches a local and remote node that are used to implement a RAID storage system. There is no teaching in Bruning that either of these nodes can be selected to be part of a set of storage nodes upon which data will be distributed based on their state information. Instead, it can be presumed that particular nodes connected to the network (see network interconnect 48 in Figure 2) will be preselected and configured for use in the RAID system with one being the local and one the remote node regardless of their states. For this reason alone, the rejection of claim 1 based on Bruning should be withdrawn.

Additionally, claim 1 calls for two storage nodes to ace "collectively" to

implement a unitary volume of network storage. From Figure 2 and the related portions of the Bruning specification, it is unclear how communication is performed between the local and remote "nodes." Specifically, there is no teaching if or how state information may be shared between the nodes and it appears in Figure 2 that the local front-end controller 22 can control all back-end controllers 26, 36, 38, 40, 42 while the remote front-end controller 46 only communicates with remote back-end controllers 40, 42. Further, from paragraphs [0020] to [0022], it appears that the remote "node" is used to provide disaster tolerance, and does not act peer-to-peer or collectively with the local node to implement the unitary volume as called for in claim 1.

Claims 3, 4, and 6-9 depend from claim 1 and are believed allowable at least for the reasons for allowing claim 1 over Bruning. Additionally, claim 3 calls for the communication medium linking the storage nodes to comprise a private and a public network. Bruning only teaches a single link between the remote and local nodes, i.e., interconnect 48 in Figure 2, and does not provide teaching that the dedicated link between the two nodes includes a private AND a public network. Claim 3 is believed allowable for this additional reason. In rejecting claim 9, the Office Action indicates that Bruning teaches selection of a set of storage nodes at paragraphs [0018] to [0019]. Applicants strongly disagree as these paragraphs provide no teaching whatsoever of a node selecting other nodes to be in a set of storage nodes based on state information (i.e., where does Bruning teach selecting the remote node or vice versa?).

Independent claim 10 was previously allowed by the Examiner but now has been grouped with the rejection of claim 1. Claim 10 includes limitations similar to claim 1 and is believed allowable over Bruning for the reasons provided for allowing claim 1. Further, though, claim 10 calls for "communication processes implemented within each of the storage nodes operable to exchange state information between at least some of the other data storage nodes." The Office Action on pages 2 and 3

provides no citation to Bruning for this limitation, and hence, it fails to state a proper case for rejecting claim 10 based on 35 U.S.C. §102. Even more significant, the Office Action fails to state that Bruning teaches the limitation provided in the final "wherein" clause that the communication processes "implement a repetitive peer-to-peer conversation between the set of storage nodes" that allows a consistent view of the "collection of storage nodes" to be maintained within each node. Applicants have reviewed Bruning and did not find teaching of this limitation. For these additional reasons, claim 10 is allowable over Bruning.

Claims 11-13 depend from claim 10 and are believed allowable as depending on an allowable base claim. Further, claim 11 calls for first and second level networks coupling the storage nodes, whereas Bruning in Fig. 2 only shows a single network (element 48). For this additional reason, claim 11 is allowable over Bruning.

Independent claim 17 is amended to include the limitations of dependent claim 18, which is cancelled. As a result, claim 17 is directed to a method that calls for a storage node responding to a storage request by implementing the request "using an arbitrary subset of the storage nodes." Bruning, as discussed with reference to claim 1, does not show or suggest any mechanism that would enable one to implement a storage request in an arbitrary subset of storage nodes. Instead, Bruning shows using 2 nodes only and these are predetermined before a storage request is received and the technique used to create the "volume 10" is predetermined. Further, claim 17 calls for determining the arbitrary set based on collected state information. Bruning fails to teach these further limitations, too, as the citation to Bruning at paragraphs [0018] and [0019] fails to discuss collection of state information or using such information to make a selection of an arbitrary number of storage nodes based on such information. Applicants request that the rejection of claim 17 based on Bruning be withdrawn because this reference fails to show several of the elements of the claim as required for rejection under 35 U.S.C.

§102.

Claims 19-21 depend from claim 17 and are believed allowable as depending from an allowable base claim. Further, the cited paragraphs of Bruning did not appear to discuss the use of an error checking and correcting code or that such code may be stored in one node while the associated unit of data is stored in another node. For these additional reasons, claims 19 and 20 are not shown by Bruning.

As with claim 10, independent claim 22 was allowed in the prior Office Action but has now been grouped with claim 1 for rejection under Bruning. Claim 22 includes limitations similar to claim 17 and is believed allowable over Bruning for the reasons provided for claim 10. Claims 23-25 depends from claim 22 and is believed allowable as depending from an allowable base claim.

Independent claim 28 is directed to a data storage system with at least three peer-to-peer storage devices. Bruning shows a local and a remote node and so, fails to anticipate the use of at least three devices. Further, claim 28 calls for the devices to be networked in a peer-to-peer fashion and it does not appear that the local and the remote nodes in Bruning are peers (i.e., where does Bruning teach in Figure 2 that the front-end controller 46 of the remote node can read and write to the disks associated with the front-end controller 22 of the local node?). Claims 29-31 depend from claim 28 and are believed allowable as depending from an allowable base claim.

Independent claim 32 calls for storage management processes to distribute data storage for "logically contiguous data across multiple storage nodes." Bruning appears to teach mirroring across a local node and a remote node but does not teach distributing logically continuous data across the nodes and hence, the reference does not support an anticipation rejection of claim 32.

Claim Rejections under 35 U.S.C. §103

Further, in the Office Action, claim 5 was rejected under 35 U.S.C. §103(a) as being unpatentable over Bruning in view of U.S. Pat. No. 5,805,804 ("Laursen"). This rejection is traversed because claim 5 depends from claims 1 and 3, which are believed allowable over Bruning for the reasons provided above, and Laursen is not asserted as overcoming the deficiencies of Bruning discussed with reference to claims 1 and 3.

Yet further, in the Office Action, claims 14-16 and 26-27 were rejected under 35 U.S.C. §103(a) as being unpatentable over Bruning in view of U.S. Pat. No. 6,779,030 ("Dugan"). This rejection is traversed because claims 14-16 depend from claim 1 and claims 26-27 depend from claim 17, and these two independent claims are believed allowable over Bruning and Dugan fails to overcome the deficiencies of Bruning discussed with reference to claims 1 and 17.

Conclusions

Based on the above remarks, it is requested that a timely Notice of Allowance be issued in this case.

No fee is believed due with this submittal. However, any fee deficiency associated with this submittal may be charged to Deposit Account No. 50-1123.

Respectfully submitted,

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